
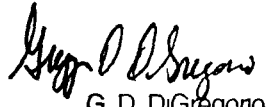
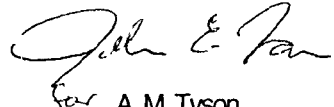



ER/WM&I DDT

<u>Performance Measure</u>		<u>November 22 1996</u>
Source/Driver: (Name & Number from ISP, IAG milestone, Mgmt Action, Corres Control, etc)	Closure # (Outgoing Corres Control #, if applicable)	Due Date
  W R Sproles Originator Name	  G D DiGregorio QA Approval	  A M Tyson Contractor Manager(s)
  A K Sieben Kaiser-Hill Program Manager(s)	 T G Hedahl Kaiser-Hill Director	

Document Subject

TRANSMITTAL OF THE DRAFT PROPOSED ACTION MEMORANDUM FOR THE SOURCE REMOVAL AT THE MOUND SITE, IHSS 113, REV 0 - AMT-096-96

KH-00003NS1A

96-RM-ER-0229-KH

Discussion and/or Comments

Please find enclosed the Draft Proposed Action Memorandum for the Source Removal at the Mound Site for concurrent review by DOE, EPA and CDPHE We would like to hold a meeting on December 9, 1996 to discuss comments and determine resolution The meeting will be confirmed the first week of December Please find enclosed four copies for DOE and four copies for the regulatory agencies If you have any questions regarding this document, please contact Wayne Sproles at extension 5790

Enclosure
As Stated

WRS/aw

cc
M C Broussard
J L McAnally
W R Sproles
A M Tyson
M R Wood
Correspondence Control
ER Records Center (2)

22 150F

CORRES CONTROL
OUTGOING LTR NO

DOE ORDER #

96-RF-6686

DIST	LTR	ENC
SENSUSSEN STAN		
BUHL TONY		
ARD BOB		
ERRERA DENNY		
HILL JOHN		
AANI, VIK		
MARTINEZ, LEN		
ACANALLY JIM		
ACKAY BOB		
UOR NANCY		
DOORHEIS GARY		

November 22, 1996

96-RF-06686

Norma Castaneda
ES&H Program Assessment
DOE, RFFO

TRANSMITTAL OF THE PROPOSED ACTION MEMORANDUM FOR THE SOURCE
REMOVAL AT THE MOUND SITE, IHSS 113, REV 0 -AKS-027-96

edahl T G		
nderson Scott		
oyd, Russ		
etamore, Drew		
orr Kent		
ahn, Steve		
ickle Gordon		
nnedy Colburn		
hould, Russ		
sters Mike		
eben Ann	X	X
iland Jennifer		

Please find enclosed the Proposed Action Memorandum for the Source Removal at the Mound Site for concurrent review by DOE, EPA, and CDPHE. We would like to hold a meeting on December 9, 1996 to discuss comments and determine resolution. The meeting will be confirmed the first week of December. Please find enclosed four copies for DOE and four copies for the regulatory agencies. If you have any questions regarding this document, please contact me at (303) 966-9886.

Ann K. Sieben
ER/WM&I Operations

bag

Orig and 1 cc - N Castaneda

Enclosure
As Stated

CORRES CONTROL	X	X
MIN RECRD/080		
TS/T130G		

CLASSIFICATION		
NI		
CLASSIFIED		
CONFIDENTIAL		
SECRET		

THORIZED CLASSIFIER
SIGNATURE

empt per CEX 266 95

REPLY TO RFP CC NO

CTION ITEM STATUS
PARTIAL/OPEN
☐ CLOSED

LTR APPROVALS

AKS

G & TYPIST INITIALS
AKS bag

3469 (Rev 7/15/96)



KAISER-HILL
COMPANY

Kaiser Hill Company, I L C

Counter Address: Rocky Hills Environmental Technology Site, State Hwy 95 in P.O. Box Rocky Hills, CO 80007 • (303) 966-7000
Mailing Address: P.O. Box 464, Golden, Colorado 80402-0464



RF/RMRS-96-0059
Rev. 0



DRAFT
Proposed Action Memorandum
for the Source Removal
at the Mound Site
IHSS 113



November 1996

DRAFT

**PROPOSED ACTION MEMORANDUM
FOR THE SOURCE REMOVAL AT THE
MOUND SITE
IHSS 113**

November 22, 1996

Revision 0

Document Control Number RF/RMRS-96-0059

**PROPOSED ACTION MEMORANDUM
FOR THE SOURCE REMOVAL AT THE MOUND SITE
IHSS 113**

DRAFT

TABLE OF CONTENTS

1 0	PURPOSE	1
2 0	PROJECT DESCRIPTION	1
2 1	Background	2
2 2	Hydrogeologic Setting	4
2 3	Mound Contamination Data Summary	4
2 3 1	Groundwater	7
2 3 2	Soil	8
3 0	PROJECT APPROACH	11
3 1	Proposed Action Objectives	11
3 2	Proposed Action	12
3 2 1	Excavation	12
3 2 2	Staging of Contaminated Soils	14
3 2 3	Treatment	14
3 3	Worker Health and Safety	15
3 4	Waste Management	16
4 0	ENVIRONMENTAL IMPACTS	17
5 0	APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS	18
5 1	CHEMICAL-SPECIFIC REQUIREMENTS AND CONSIDERATIONS	18
5 1 1	NESHAPs	18
5 1 2	Action Level Framework	18
5 2	ACTION-SPECIFIC REQUIREMENTS AND CONSIDERATIONS	19
5 2 1	Identification and Listing of Hazardous Waste	19
5 2 2	Remediation Waste	19
5 2 3	Land Disposal Restrictions	19
5 2 4	Contaminated Soil Feed Stockpile as a Corrective Action Management Unit	20
5 2 5	RCRA Subpart P Thermal Treatment Unit	22
5 2 6	Temporary Unit Tank and Container Storage	23
5 2 7	Closure Requirements	24
5 2 8	VOC and Particulate Emission Controls	25
5 3	LOCATION-SPECIFIC REQUIREMENTS AND CONSIDERATIONS	25

6 0	IMPLEMENTATION SCHEDULE	26
7 0	REFERENCES	26

LIST OF TABLES

TABLE 2-1	MOUND SITE UPGRADIENT GROUNDWATER SAMPLING RESULTS SUMMARY	7
TABLE 2-2	MOUND SITE DOWNGRADIENT GROUNDWATER SAMPLING RESULTS SUMMARY	7
TABLE 2-3	EVALUATION OF HIGHEST MOUND SITE SAMPLE RESULT* TO TIER I SUM-OF-RATIO VALUE	10
TABLE 2-4	MOUND SITE 95% UCL FOR THE MEANS AND SUM-OF-RATIOS FOR TIER I AND TIER II ACTION LEVELS	11
TABLE 3-1	CLEANUP TARGET LEVELS	13
TABLE 3 2	TDU PERFORMANCE STANDARDS	15
TABLE 5-1	RCRA §264 SUBPART B SUBSTANTIVE REQUIREMENTS	21
TABLE 5-2	CSFS CAMU CRITERIA	22

LIST OF FIGURES

Figure 2-1	Mound Site Location Map	3
Figure 2-2	Mound Site Boring and Well Location Map	5
Figure 2-3	Mound Site Generalized Hydrogeologic Cross Section	6
Figure 2-4	PCE Concentrations at Mound Site Boreholes	9
Figure 2-1	Mound Site Location Map	4
Figure 2-2	Mound Site Boring and Well Location Map	6
Figure 2-3	Mound Site Generalized Hydrogeologic Cross Section	7
Figure 2 4	PCE Concentrations at Mound Site Boreholes	12

ACRONYMS

DRAFT

ALF	Action Levels & Standards Framework
ARARs	Applicable or Relevant and Appropriate Requirements
CAMU	Corrective Action Management Unit
CCR	Colorado Code of Regulations
CERCLA	Comprehensive Environmental Response and Liability Act
CFR	Code of Federal Regulations
COC(s)	Contaminant(s) of Concern
CSFS	Contaminated Soil Feed Stockpile
CWTF	Consolidated Water Treatment Facility
DOE	Department of Energy
EPA	Environmental Protection Agency
HEPA	High Efficiency Particulate Air
IHSS	Individual Hazardous Substance Site
LDRs	Land Disposal Restrictions
mg/L	Milligrams Per Liter
mg/Kg	Milligram Per Kilogram
NESHAP	National Emission Standards for Hazardous Air Pollutants
OSHA	Occupational Safety and Health Administration
PA	Protected Area
PAM	Proposed Action Memorandum
PCE	Tetrachloroethylene or Perchloroethylene
pCi/g	Pico Curies Per Gram
PPE	Personal Protective Equipment
RACT	Reasonable Available Control Technologies
RCRA	Resource Conservation and Recovery Act
RFCA	Rocky Flats Cleanup Agreement
RFETS	Rocky Flats Environmental Technology Site
RMRS	Rocky Mountain Remediation Services
RFI/RI	RCRA Facility Investigation/Remedial Investigation
SAP	Sampling and Analysis Plan
TCE	Trichloroethane
TDU	Thermal Desorption Unit
TUs	Temporary Units
UCL	Upper Confidence Limit
VOC(s)	Volatile Organic Compound(s)
yd ³	Cubic Yards

1 0 PURPOSE

This Proposed Action Memorandum (PAM) outlines the approach that will be taken and the applicable requirements for the excavation and subsequent removal of volatile organic compounds (VOCs) from soil at the Rocky Flats Environmental Technology Site (RFETS), Individual Hazardous Substance Site (IHSS) 113. The IHSS 113 is also known as the Mound Site.

This source removal is being conducted in accordance with the Final Rocky Flats Cleanup Agreement (RFCA [DOE, 1996]), and Federal, State, and local laws, as well as RFETS policies and procedures. The VOCs addressed by this action are Comprehensive Environmental Response and Liability Act (CERCLA) hazardous substances and Resource Conservation and Recovery Act (RCRA) hazardous waste constituents contained in an environmental media (soil). Removal and treatment of the hazardous substances at this site will mitigate a source of groundwater contamination in the area. This action will be conducted in a manner which is protective of site workers, the public, and the environment.

2.0 PROJECT DESCRIPTION

Between 1954 and 1958, drums containing uranium, beryllium, hydraulic oil, carbon tetrachloride and tetrachloroethylene (PCE) were stored at the Mound Site. Records also indicate that some of the drums contained low levels of plutonium. Prior to removal of the drums in 1970, some of the drums were known to have leaked, and the resulting contamination is impacting groundwater. It is expected that approximately 400 to 1,000 cubic yards (yd³) of soil are contaminated with VOCs above the Tier I subsurface action levels specified in Attachment 5, The Action Levels & Standards Framework for Surface Water, Ground Water, and Soils, of RFCA.

Under this proposed action, the contaminated soils will be removed from the Mound Site and processed using thermal desorption to remove the VOC contamination, a process used successfully at several similar sites at the RFETS. At the conclusion of the project, the treated soil will be returned to the Mound Site and the area restored to a comparable undisturbed condition. The intent of this source removal is to remove the VOC contaminants of concern.

(COCs), that may leach into the groundwater. The groundwater at the Mound Site will be addressed as part of the site groundwater management strategy.

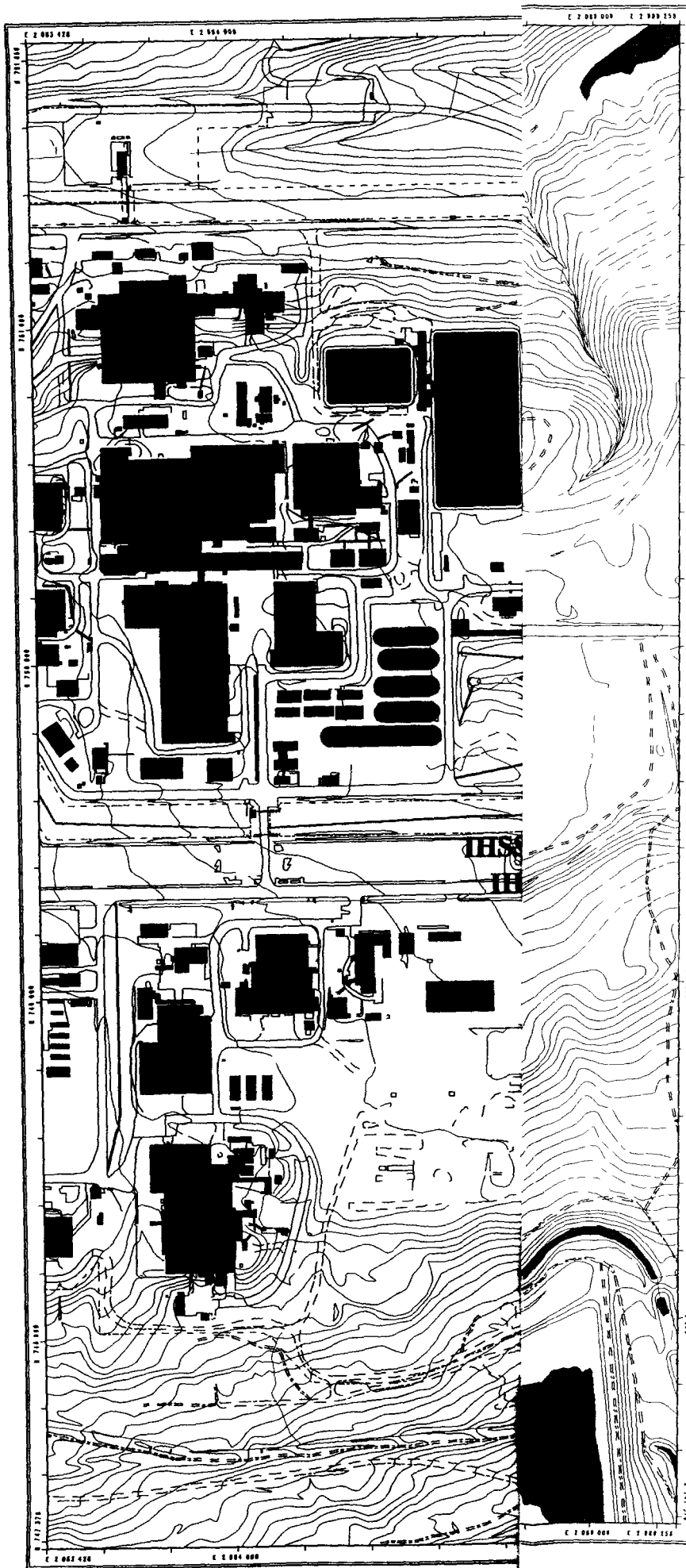
Information on site history, chemical and radiological contamination, geology, and hydrogeology of the Mound Site have been collected over many years and documented in various reports. Information used to prepare this PAM has been taken from the *Rocky Flats Environmental Technology Site Historical Release Report for the Rocky Flats Plant* (DOE, 1992), the *Phase II RFI/RI Report for Operable Unit No. 2* (DOE, 1995), the *Soil Vapor Survey Report for Operable Unit 2 Subsurface Interim Remedial Action* (EG&G, 1994), the *Draft Trenches and Mound Site Characterization Report* (RMRS, 1996a), and from *Results of the 1996 Pre-Remedial Investigation of the Mound Site* (RMRS, 1996b). The location of the Mound Site is shown in Figure 2-1.

The cleanup targets used for determining the extent of excavation are the RFCA Tier I subsurface action levels, and are given in Section 3.2.1. The performance or treatment standards for the thermal desorption unit (TDU) will be the RCRA Treatment Standards For Hazardous Waste (6 Colorado Code of Regulations (CCR) 1007-3, 268.40) for the VOCs found in the Mound Site soils. These standards are given in Section 3.2.3.

2.1 Background

The Mound Site is located north of Central Avenue, and east of the protected area (PA) fence. Approximately 1,405 intact drums were placed at the Mound Site between April 1954 and September 1958 and covered with soil, thus generating a "mound". The drums originated from Building 444, Building 888, Building 883, Building 771, and Building 776. The drums contained uranium and beryllium-contaminated lathe coolant (a mixture of approximately 70 percent hydraulic oil and 30 percent carbon tetrachloride). Historical information also indicates that some of the coolant contained plutonium. In addition, some of the drums contained PCE, which has been found at high concentrations in monitoring wells and soil borings at the Mound Site.



In 1970, all drums were removed from the Mound Site along with some radiologically contaminated soil. Approximately 10 percent of the drums were thought to have holes at the time of removal. Solid material was shipped offsite for disposal, while liquids were sent to









Mound Site Location Map

Figure 2-1

EXPLANATION

-  Contours (5 intervals)
-  IHSS

Standard Map Features

-  Buildings or other structures
-  Lakes and ponds
-  Streams, ditches or other drainage features
-  Fences
-  Paved roads
-  Dirt roads

DATA SOURCE:
 Buildings, roads, and fences provided by
 Facilities Eng.
 EG&G Rocky Flats, Inc. 1991
 Hydrology provided by
 USGS (date unknown)



Scale = 1 5430
 1 inch represents approximately 453 feet

100 0 200 400ft

State Plane Coordinate Projection
 Colorado Central Zone
 Datum NAD27

U S Department of Energy
 Rocky Flats Environmental Technology Site

Prepared
 by



**Rocky Mountain
 Remediation Services, LLC**
 Geographic Information Systems Group
 Rocky Flats Environmental Technology Site
 P.O. Box 464
 Golden, CO 80402-0464

MAP ID 97-0014

November 21, 1996

g:\m\des\rfp map emb\97 0014\locatn.am

DRAFT

Building 774 for processing. No airborne radiological contamination was detected during the drum removal. Soil from the excavation was graded, and the excess was placed in the landfill.

Recent characterization data indicates VOCs, predominantly PCE, have been detected in subsurface soils at levels requiring cleanup. Records, however, do not exist of the volume of contaminants released to the soils at the Mound Site.

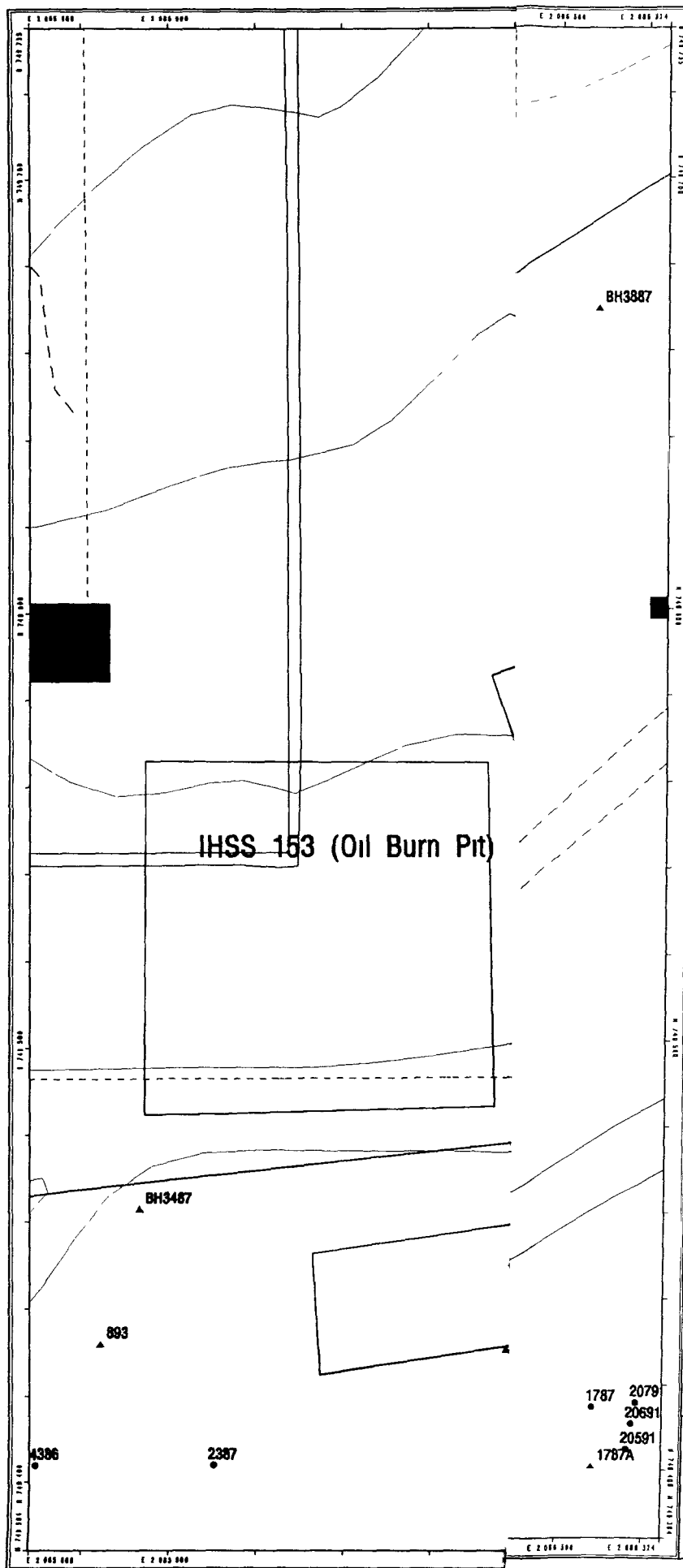
2.2 Hydrogeologic Setting

The hydrogeologic setting consists of 12 to 13 feet of Rocky Flats Alluvium (calcareous sandy gravel and clayey gravel) unconformably overlying claystone and sandstone of the Arapahoe Formation, which unconformably overlies the primarily massive claystone of the Laramie Formation. The surface soils in the vicinity of the Mound Site were disturbed during the creation and removal of the Mound, construction of the PA fence, excavation of the Central Avenue ditch, and other construction activities in the area (DOE, 1995).

The locations of boreholes and wells used to characterize the Mound Site are given in Figure 2-2. Groundwater seasonally ranges in depth from approximately 6 feet below ground surface to below the contact between the underlying Arapahoe Formation and the Rocky Flats Alluvium. The bedrock water table, defined by wells completed in the Arapahoe Formation, ranges in depth from 15 to 20 feet below ground surface. The groundwater flow direction in the Rocky Flats Alluvium is primarily to the north. Seasonal recharge from the ground surface and the Central Avenue ditch causes groundwater to flow towards the north at a gradient of 0.011 ft/ft. Mean hydraulic conductivities are 2.06×10^{-04} cm/s for the Rocky Flats Alluvium and 8.82×10^{-07} cm/s for the weathered claystone. VOC contaminants that may originate from the Mound Site are observed in downgradient monitoring wells and seeps. Figure 2-3 depicts the generalized hydrogeologic cross section at the Mound Site.

2.3 Mound Contamination Data Summary

A brief summary of the characterization data referenced in Section 2.0 is presented below. In May 1995, four boreholes were drilled at the Mound Site (RMRS, 1996a) to evaluate soil gas survey results from the previous year (EG&G, 1994). During August 1996, sixteen boreholes were drilled for the purpose of characterizing and defining the extent of subsurface contamination (RMRS, 1996b) identified by the 1995 investigation. In addition, seven



Mound Site Boring and Well Location Map

Figure 2-2

EXPLANATION

- Line of Hydrogeologic Cross Section
- Contours (5 intervals)
- IHSS
- Central Avenue Ditch
- Groundwater Well Locations (Note Well 174 is abandoned)
- Borehole Locations
- Area to be excavated

Standard Map Features

- Buildings or other structures
- Fences
- Paved roads
- Dirt roads

DATA SOURCE:
 Buildings, roads, and fences provided by
 Facilities Eng.
 EDO&O Rocky Flats, Inc. 1991
 Hydrology provided by
 USGS (date unknown)



Scale = 1 430
 1 inch represents approximately 38 feet



State Plane Coordinate Projection
 Colorado Central Zone
 Datum NAD27

U S Department of Energy
 Rocky Flats Environmental Technology Site

Prepared
 by



**Rocky Mountain
 Remediation Services, L.L.C.**
 Geographic Information Systems Group
 Rocky Flats Environmental Technology Site
 P.O. Box 854
 Golden, CO 80402-0454

MAP ID 87-0014





November 22 1995

h:\data\hp\map-am\map7\0014\mound-2.am

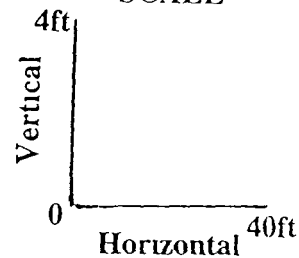
MOUND SITE GENERALIZED HYDROGEOLOGIC CROSS SECTION

Figure 2-3

EXPLANATION

-  Monitoring Well Screen Interval
 -  8/94 Water Level with Date of Measurement
 - 0.6U Concentration of Tetrachloroethene in Soil (reported in mg/Kg)
 - 528 mg/L Concentration of Tetrachloroethene in Water (reported in mg/L)
 - Qrf Rocky Flats Alluvium (Quaternary Age) (primarily clayey sandy gravel)
 - Ka Arapahoe Formation (Cretaceous Age) (primarily silty claystone)
 -  Bedrock Contact (dashed where inferred)
 -  Approximate Vertical Extent of PCE Contamination
- Note: All values are maximum reported concentrations for tetrachloroethene.
J=analyte was detected below method detection limit
D=dilution
E=estimated value

SCALE



10x Vertical Exaggeration

DRAFT

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by



Rocky Mountain
Remediation Services, LLC
Geographic Information Systems Group
Rocky Flats Environmental Technology Site
P.O. Box 464
Boulder, CO 80402-0464

MAP ID: 87-0014

November 08, 1998

DRAFT

monitoring wells and six boreholes have been drilled in the vicinity of the Mound Site during the past nine years. The locations of these boreholes and wells are shown in Figure 2-2. Subsurface soil and groundwater contamination at the Mound Site are summarized below.

2.3.1 Groundwater

Groundwater samples from upgradient wells (4386, 2387, 01791, 01891, and 12091) and downgradient wells (0174, 1987, 2087, 02191, and 02291), summarized in Tables 2.3.1-1 and 2.3.1-2, indicate an increase in PCE and trichloroethane (TCE) in the groundwater passing through the Mound Site. These wells are screened in the Rocky Flats Alluvium and weathered claystone of the Arapahoe Formation (DOE, 1995). The presence of VOC contamination in the upgradient wells has been linked to the 903 Pad and other potential sources. The increase in concentrations of PCE in the groundwater downgradient of the Mound Site indicates the site is a source of groundwater contamination. The solubility of PCE is 150 mg/L (Cohen and Mercer, 1993). This contaminant was observed at a concentration of 528 mg/L in downgradient well 0174. This indicates the potential presence of a dense nonaqueous phase liquid, PCE product, in the source area (EPA, 1992).

TABLE 2-1

MOUND SITE UPGRADIENT GROUNDWATER SAMPLING RESULTS SUMMARY

Contaminant	Well 4386	Well 2387	Well 01791	Well 01891	Well 12091
PCE	0.0003	0.074	0.016	0.002	0.00059
TCE	<0.005	<0.005	0.001	<0.0002	0.0003

Note: all concentrations are maximum observed concentrations and reported in mg/L.

TABLE 2-2

**MOUND SITE DOWNGRADIENT GROUNDWATER
SAMPLING RESULTS SUMMARY**

Contaminant	Well 0174	Well 02191	Well 02291	Well 1987	Well 2087
PCE	528	0.98	3.4	0.88	0.091 J
TCE	18	0.067	0.41	0.07	0.005

Note: all concentrations are maximum observed concentrations and reported in mg/L, J = Analyte detected below method practical quantitation limit.

DRAFT

2.3.2 Soil

Results from the Phase II RFI/RI investigations, soil gas surveys, and the 1995 and 1996 subsurface investigations of the Mound Site indicate the highest levels of soil contamination are observed in the northeast portion of the site (Figure 2-4). The primary contaminants found during previous soil investigations are PCE and methylene chloride both of which exceed the RFCA Tier I subsurface soil action levels. However results associated with methylene chloride have all had laboratory qualifier flags indicating blank contamination. Therefore, methylene chloride may not be a contaminant at this site, but is included as a COC for completeness.

Volatile Organic Compounds in Soil

Figures 2-3 and 2-4 show the extent of PCE contamination at the Mound Site. Several subsurface soil samples collected from the surface to 20 feet in borehole 14295, exceeded the PCE Tier I subsurface soil action level specified in Table 3-1. These samples contained concentrations of PCE up to 760 mg/kg. Borehole 250296 was observed with 160 mg/kg PCE at a depth of 5.1 to 5.5 feet. Borehole 251696 was observed with 440 mg/kg PCE at a depth of 7 to 8 feet and 0.41 mg/kg PCE at a depth of 11 to 13 feet. Figure 2-4 presents the PCE concentrations detected in the Mound Site boreholes.

Polychlorinated Biphenyls in Soil

No polychlorinated biphenyls (PCBs) were detected above the RFCA subsurface soil action levels.

Metals in Soil

Analyses for beryllium, a component of the material contained in drums previously stored at this site, indicated no detections above Tier I subsurface soil action levels. In addition, no other metals were detected exceeding the RFCA Tier I subsurface soil action levels.

Radionuclides in Soil

Thirty-three samples have been collected from the Mound Site and analyzed for radionuclide content. As stated in RFCA, in order to account for the total dose from multiple radionuclides, the sum-of-ratios method must be applied to evaluate potential dose. Further evaluation is triggered if the sum-of-ratios from multiple radionuclides, in the same sample, exceed a value of 1, using Tier I subsurface action levels. Results of this evaluation indicate that the RFCA Tier I subsurface soil action levels for radionuclides were not exceeded for any of the thirty-three

PCE Concentrations at Mound Site Boreholes

Figure 2-4

EXPLANATION

Contours (5 intervals)

∇ IHSS

∇ Central Avenue Ditch

● Groundwater Well Locations

▲ Borehole Locations
5-8/780

5-8 = Sample Depth (ft)

780 = PCE Concentration(mg/Kg)

Standard Map Features

■ Buildings or other structures

- - - Fences

== Paved roads

- - - Dirt roads

DATA SOURCE

Buildings, roads, and fences provided by

Facilities Engr.

EG&G Rocky Flats, Inc. 1991.

Hydrology provided by

USGS (date unknown)

NOTE:

Note: J - analyte detected below method practical quantitation limit

D=dilution, E=estimated value, ND=analyte not detected

U = Method detection limit



State Plane Coordinate Projection
Colorado Central Zone
Datum NAD27

U S Department of Energy
Rocky Flats Environmental Technology Site

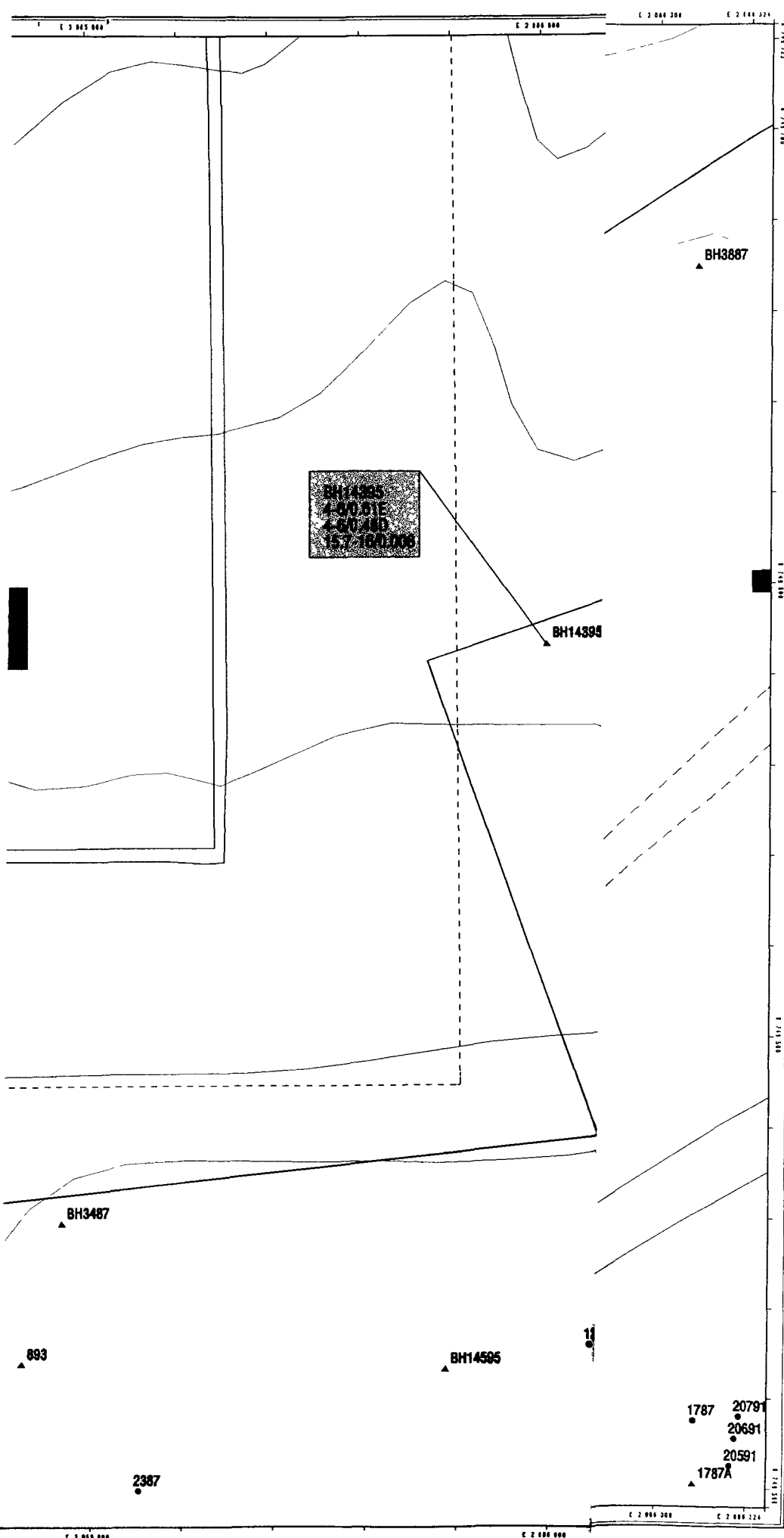
Prepared
by



**Rocky Mountain
Remediation Services, L.L.C.**
Geographic Information Systems Group
Rocky Flats Environmental Technology Site
P.O. Box 454
Golden CO 80402-0454

MAP ID 87-0014

November 22



DRAFT

samples collected. Therefore, remedial action for radionuclides was not triggered under RFCA. As an indicator of the data, results of the highest radiological concentration sample is evaluated and presented in Table 2-3.

TABLE 2-3
EVALUATION OF HIGHEST MOUND SITE SAMPLE RESULT*
TO TIER I SUM-OF-RATIO VALUE

Radioisotope	Concentration (pCi/g)	Tier I Action Level (pCi/g)	Ratio
Uranium-233/234	18.41	1738	0.0106
Uranium-235	1.376	135	0.0102
Uranium-238	101.1	586	0.1725
Americium-241	0.3572	215	0.0017
Plutonium-239/240	1.905	1429	0.0013
Total Sum-of-Ratio			0.1963

* From borehole 14295, sample number BH20837WC

For the treated soil planned for return to the site, an additional evaluation of the radiological data was performed, where the sum-of-ratios was calculated from the 95% upper confidence limit (UCL) of the mean using the six samples collected within the proposed Mound Site excavation area. These values were compared to the Tier I and Tier II subsurface action levels. The sum-of-ratios values for both Tier I and Tier II were less than 1. Therefore, all soil excavated from the Mound Site is anticipated to be returned after treatment, without further radiological characterization. However, for worker safety, radiological monitoring will be performed during cleanup activities. If unexpected levels of radioactivity are encountered, further sampling and evaluation will be performed. Table 2-4 summarizes the evaluation described above.

DRAFT

TABLE 2-4
MOUND SITE 95% UCL FOR THE MEANS AND SUM-OF-RATIOS
FOR TIER I AND TIER II ACTION LEVELS

Radioisotope	Mean Concentration (pCi/g)	Standard Deviation (pCi/g)	95% UCL (pCi/g)	Tier I Ratio	Tier II Ratio
Uranium-233/234	4 365333	7 431843	9 355879	0 005383	0 030475
Uranium-235	0 3261	0 600132	0 729094	0 00541	0 030379
Uranium-238	20 20498	40 00499	47 06867	0 080322	0 456977
Americium-241	0 09165	0 147153	0 190464	0 3000886	0 005012
Plutonium-239/240	0 47145	0 780405	0 995499	0 000697	0 00395
Total Sum-of-Ratios				0 092688	0 526794

3 0 PROJECT APPROACH

The proposed accelerated action will entail excavating soil contaminated with VOCs from the Mound Site and processing the soil using thermal desorption technology to remove the VOCs. Following thermal desorption, the treated soil will be returned to the site and the area re-vegetated. The project will be conducted in accordance with the RFCA guidelines, and with DOE and RFETS Environmental Restoration policies and procedures. The project will also utilize lessons learned from previous accelerated actions.

3 1 Proposed Action Objectives

The objective of the accelerated action is to remove VOC-contaminated soils from the Mound Site, thereby preventing further degradation of groundwater. The subsurface soils at the original Mound Site contain substantially higher concentrations of VOCs than the surrounding areas. This source removal will remediate one of the top ten IHSS sites at RFETS.

DRAFT

3 2 Proposed Action

This action will involve excavating approximately 400 to 1,000 yd³ of soil from the site using standard excavating equipment. The soil will be temporarily stockpiled, awaiting thermal desorption processing. The stockpiled soil will be staged approximately 600 feet east of the Mound Site, in the area where the TDU will be mobilized to process the soil (Figure 2-1).

3 2 1 Excavation

Conventional excavation techniques will be used to remove the contaminated soil at the Mound Site. Excavation equipment will consist of a track-mounted excavator, backhoe, and/or front-end loader. Contaminated soils will be moved in dump trucks or by similar transport to a staging area which is described in Section 3 2 2.

During soil handling activities dust minimization techniques, such as water sprays, will be used to minimize suspension of particulates. In addition, earth-moving operations will not be conducted during periods of high winds. The RFETS Environmental Restoration Field Operations Procedure FO 01, Air Monitoring and Dust Control, will be incorporated into the project.

An organic vapor analyzer will be used as a field screening tool to guide excavation activities. Considering the bedrock and groundwater conditions, and the possible depth of dense nonaqueous phase liquid contamination at the Mound Site, the excavation will be limited to the highly weathered bedrock below the alluvial/bedrock contact. This highly weathered bedrock is expected to be approximately two to three feet below the top of bedrock. At the completion of excavation, samples will be collected for laboratory analyses, along the base and sides of the excavation, in accordance with the Sampling and Analysis Plan, to establish the post-action condition of the subsurface soil. Further excavation and sampling will continue until the cleanup target levels listed in Table 3-1 have been met, or the limiting condition described above is met.

Cleanup target levels used for the excavation activities are the RFCA Tier I subsurface soil action levels. These action levels were incorporated to prevent any further degradation above the Tier I groundwater action levels. Table 3 1 lists the cleanup target levels.

DRAFT

**TABLE 3-1
CLEANUP TARGET LEVELS**

Contaminant	Concentration (mg/kg)
Carbon Tetrachloride	11 0
Methylene Chloride	5 77
PCE	11 5
TCE	9 27

The VOCs listed in Table 3-1 are the COCs for the project. This list was developed by assessing the existing analytical data from the site and by the use of process knowledge to ascertain what VOCs existed in the drums that were initially stored at the site. If other VOCs are identified during excavation, the appropriate Tier I subsurface soil action levels will be incorporated as cleanup target levels.

To minimize groundwater seepage, and to assist in trench-wall stability, efforts will be made prior to excavation to inhibit the seasonal rise in the water table around the Mound Site. The Central Avenue Ditch running along the southern perimeter of the Mound Site is probably the primary cause of the local water-level fluctuation at the Mound Site. Since this ditch is unlined, standing water may be recharging the groundwater at the Mound Site. Also, as part of the Mound Site excavation, the northern wall of the Central Avenue ditch in the vicinity of the excavation will be removed, leaving a pathway for stormwater to run into the excavation. Therefore, prior to excavation, an extension to an existing culvert will be placed along the southern perimeter of the Mound Site. This effort will minimize local groundwater recharge and greatly simplify subsequent excavation activities.

De-watering of the excavation may also be necessary due to seasonally high water tables. If de-watering of the excavation is necessary, a field sump will be used to transfer the water into a temporary storage container(s). The water will then be treated in the Consolidated Water Treatment Facility (CWTF) located in Building 891. Following treatment, the water will be sampled and released in accordance with CWTF discharge criteria.

DRAFT

3.2.2 Staging of Contaminated Soils

Contaminated soil excavated from the Mound Site will be staged approximately 600 feet to the east of the Mound Site, in the northeast trenches area. This site was chosen because it is relatively flat and contains support trailers and utilities from the previous thermal desorption projects at RFETS. The excavated soil will be temporarily stored in a contaminated soil feed stockpile (CSFS). The CSFS will be designed to contain the contaminated soil and minimize wind blown dispersion and storm water interaction with the soil by using concrete barriers and a water-resistant tarpaulin. In addition, a plastic lined ditch will be constructed surrounding the stockpile to capture local stormwater. Stormwater collected from this ditch may be used to control dust on soils awaiting treatment in the TDU or will be collected for onsite treatment at Building 891.

After treating the stockpiled soil within the CSFS, any residual contaminated surface soil will be removed as necessary and treated by the TDU. The criteria listed in Table 3-1 will be used to evaluate the soils beneath the CSFS. The regulatory framework for the CSFS is described in Section 5.0.

3.2.3 Treatment

A low-temperature TDU will be used to remove the VOCs from the contaminated soils in a non-destructive manner. The TDU process heats and passes air through the soil to volatilize or "strip" the VOCs into the vapor phase. Vacuum is applied to the soils which further enhances the VOC stripping process. Depending on the specific thermal desorption vendor/unit selected, the treatment unit heats the soil to a temperature range between 120 and 700 degrees Fahrenheit. No incineration or destruction of VOCs occurs in the TDU at these temperatures.

The system will be equipped with a high-efficiency particulate air (HEPA) filter to minimize particulate emissions. The off-gases will be captured and cooled in a condenser. The aqueous phase condensate will be removed from the condenser for further processing at the CWTF in Building 891. If organic phase liquids are recovered from the condenser, these liquids will be containerized for offsite disposal. The regulatory framework for the TDU operation is described in Section 5.0.

DRAFT

Following processing of soil through the TDU, the soil will be sampled and analyzed to verify that it meets the performance standards for treatment. Should the treated soil fail to meet the standards, the soil will continue to be processed until it meets the performance standards. The treated soil will then be returned to the Mound Site. The performance standards are the RCRA Treatment Standards For Hazardous Waste for the chlorinated solvent-based VOCs that were identified as COCs for this project. These standards were taken from the Colorado Code of Regulations (CCR) under Part 6 CCR 1007-3, 268 40, Treatment Standards for Hazardous Waste. The standards for the Mound Site COCs are listed in Table 3 2.

TABLE 3 2
TDU PERFORMANCE STANDARDS

Contaminant	Concentration (mg/kg)
Carbon Tetrachloride	6 0
Methylene Chloride	5 77*
PCE	6 0
TCE	6 0

* Note: Though the hazardous waste regulations stipulate a 30 mg/kg treatment performance standard for methylene chloride, this concentration exceeds the "put back", Tier I action levels specified by RFCA, and used to guide the activities stated in Section 3 2 1. Therefore, the more conservative RFCA action level is used instead of the standard promulgated in the hazardous waste regulations.

3 3 Worker Health and Safety

Due to the contaminants present at the Mound Site, this project falls under the scope of the Occupational Safety and Health Administration construction standard for Hazardous Waste Operations and Emergency Response, 29 Code of Federal Regulations (CFR) 1926 65. Under this standard, a Site-Specific Health and Safety Plan will be developed to address the safety and health hazards of each phase of site operations and specify the requirements and procedures for employee protection. In addition, the DOE Order for Construction Project Safety and Health Management, 5480 9A, applies to this project. This order requires the preparation of Activity Hazard Analyses to identify each task, the hazards associated with each task, and the cautions necessary to mitigate the hazards. These requirements will be integrated wherever appropriate.

DRAFT

This project could expose workers to physical, chemical, and low levels of radiological hazards. The physical hazards include those associated with excavation activities, use of heavy equipment, noise, heat stress, cold stress, and work on uneven surfaces. Physical hazards will be mitigated by appropriate use of PPE, engineering, and administrative controls. Chemical hazards will be mitigated by the use of PPE and administrative controls. Appropriate skin and respiratory personal protective equipment will be worn throughout the project. Routine VOC monitoring will be conducted with an organic vapor monitor for any employees who must work near the contaminated soil (i.e. soil sampling or excavation personnel). Based on employee exposure evaluations, the Site Health and Safety Officer may downgrade personal protective equipment requirements, if appropriate. If field conditions vary from the planned approach, an Activity Hazard Analysis will be prepared for the existing circumstances and work will proceed according to the appropriate control measures. Data and controls will be continually evaluated. Field radiological screening will be conducted using radiological instruments appropriate to detect surface contamination and airborne radioactivity. As required by 10 CFR 835, Radiation Protection of Occupational Workers, all applicable implementing procedures will be followed to insure protection of the workers. Finally, dust minimization techniques will be used to minimize suspension of contaminated soils.

3.4 Waste Management

The soils processed in the TDU will be returned to the Mound Site after a determination that soils have attained the treatment performance standards, and unexpected levels of radionuclides were not encountered during field operations. Additional sampling for radioisotopes will be performed if direct monitoring indicates that radionuclides are present above expected levels.

Any ancillary wastes generated as part of this proposed action, such as personal protective equipment, will be characterized based on process knowledge and radiological screening. Waste will be managed, recycled, treated, and/or disposed of in accordance with RFETS policies and procedures, and in accordance with Federal, State, and local laws and regulations.

The residual materials collected as part of the thermal treatment process, the aqueous and organic phase condensate, and the high efficiency particulate air (HEPA) filters, will be managed according to the knowledge of the process that generated the residual wastes, radiological screening, and, where appropriate, additional analytical characterization. The aqueous phase condensate will be treated onsite at the Consolidated Water Treatment Facility located in

DRAFT

Building 891 If an organic phase condensate is recovered, this material will be packaged for offsite incineration. The HEPA filters may contain low levels of radionuclides and will be managed onsite until they can be sent to an approved disposal facility.

4.0 ENVIRONMENTAL IMPACTS

The National Environmental Policy Act requires that actions conducted at the RFETS consider potential impacts to the environment. The no action alternative was considered and is not acceptable because it would result in no improvement to the contaminated groundwater and soil resources. Air quality impacts are expected to be of short duration and of de minimus quantity, and will be mitigated by VOC emission controls on the thermal desorption unit and through dust control. Surface water quality and wetlands impacts are not anticipated. Groundwater quality will be improved as a result of the action and only limited changes to ground water flow would be expected given the small area excavated.

The excavation and treatment areas have seen repeated disturbances over the past four decades. Revegetation will mitigate any impacts caused by this action and the previous disturbances. Any impacts to the soil's ability to support vegetation following excavation and treatment will be addressed. Given the relatively small area of excavation and treatment, and the project's short duration, impacts to fauna will also be limited and of short duration. Because the project is located away from any surface water, wetlands or habitat suitable for the threatened and endangered species known to inhabit RFETS, impacts to threatened and endangered species and migratory birds are not anticipated, and periodic surveys will be conducted per RFETS procedures. Historic and cultural resources are not present at the site.

Human health impacts are addressed through requirements for worker protection, and requirements to control the dispersion of contamination to air, water and soil. No irreversible or irretrievable commitment of resources will occur. The native vegetation has been repeatedly disturbed, and soil and groundwater are currently contaminated with VOCs. A net improvement in resource quality will occur and will be consistent with both the short term and long term uses anticipated at the site. Cumulative impacts will be extremely limited or nonexistent. The activity is of short duration and the historically disturbed areas will be revegetated. In fact, historic impacts to soil and groundwater resources will be reduced.

DRAFT

5 0 APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS

RFETS accelerated actions performed under a PAM must attain, to the maximum extent practicable, Federal and State applicable or relevant and appropriate requirements (ARARs) For that reason, the substantive attributes of the Federal and State ARARs must be identified

In addition, RFCA provides for waiver of permits for accelerated actions conducted in the buffer zone (RFCA ¶16 a) The Mound Site, the CSFS, the TDU and Temporary Units will all be located in the buffer zone For each permit waived, RFCA requires identification of the substantive requirements that would have been imposed in the permit process (RFCA ¶17) Further, the method used to attain the substantive permit requirements must be explained (RFCA ¶17c)

5 1 CHEMICAL-SPECIFIC REQUIREMENTS AND CONSIDERATIONS

The only chemical specific ARAR identified was the National Emission Standards for Hazardous Air Pollutants (NESHAP) for radionuclides In addition, the RFCA Action Level Framework (ALF) Tier I subsurface soil action levels were identified as to-be-considered

5.1.1 NESHAPs

The 40 CFR §61.92 is applicable and requires that no member of the public receive more than 10 mrem per year above background from airborne sources of radiation Demonstration of compliance with 40 CFR §61.92 is performed on a sitewide basis taking into consideration all RFETS sources Stack monitoring is required for all release points which could contribute greater than 0.1 mrem/year Based upon preliminary estimates, monitoring will not be required A formal analysis will be prepared

5.1.2 Action Level Framework

The Tier I subsurface soil action levels for VOCs provided in the RFCA Action Level Framework were considered and adopted as the cleanup target levels (See Table 3-1)

5.2 ACTION-SPECIFIC REQUIREMENTS AND CONSIDERATIONS

The following action-specific requirements and considerations were evaluated specific to the source removal at the Mound Site

- Identification and Listing of Hazardous Wastes
- Definition of Remediation Waste
- Land Disposal Restrictions
- Contaminated Soil Feed Stockpile as a Corrective Action Management Unit (CAMU)
- RCRA Subpart P Thermal Treatment Unit
- Temporary Unit Tank and Container Storage
- VOC and Particulate Emission Controls

5.2.1 Identification and Listing of Hazardous Waste

Requirements governing the identification and listing of hazardous wastes are applicable to the source removal (See 6 CCR 1007-3, §261). Based upon process knowledge and characterization data, the contaminated soil contains F001/F002 solvents that were released from the drums

5.2.2 Remediation Waste

Remediation waste is defined as

all solid and hazardous wastes, and all media (including groundwater, surface water, soils and sediments) and debris, which contain listed hazardous wastes or which themselves exhibit a hazardous waste characteristic, that are managed for the purpose of implementing corrective action (See §260.10)

The definition of remediation waste is applicable to all wastes and media generated in conjunction with this action

5.2.3 Land Disposal Restrictions

If the F001/F002 soil is actively managed (i.e., excavated and treated), the land disposal restrictions (LDRs) for the F001/F002 soil become applicable if "placement" of the remediation

DRAFT

wastes in or on the land will occur (see §268.40). Selecting the LDRs, and the more stringent ALF Tier I subsurface soil action levels (e.g., methylene chloride) as performance standards, ensures that it will be permissible to return the treated soil to the excavation (See Table 3-2).

LDRs are applicable to the F001/F002 aqueous phase condensate generated during operation of the TDU. When the condensate is transferred to the CWTF (Building 891) for treatment, RCRA is no longer applicable or relevant and appropriate because of the Waste Water Treatment Unit Exclusion (See §260.10 and §264.1(g)(6)). Instead, the CWTF will treat the aqueous phase condensate to meet applicable surface water quality standards under a National Pollution Discharge Elimination System (NPDES) framework.

5.2.4 Contaminated Soil Feed Stockpile as a Corrective Action Management Unit

The establishment of the contaminated soil feed stockpile as a CAMU requires a permit waiver. For that reason, the discussion in this section is being provided to satisfy ¶17 of RFCA.

Using the CAMU requirements as ARAR is appropriate, as indicated by EPA statements in the preamble to the final rule:

The substantive requirements of today's regulations for CAMUs and temporary units are expected to be applicable or relevant and appropriate requirements (ARARs) for the remediation of many CERCLA sites. (See 58 FR 8679, left column, bottom)

In addition, EPA made it clear that a CAMU is the appropriate mechanism for land-based remediation waste management:

For example, under today's CAMU provisions, a waste pile could be designated as part of a CAMU. This would enable the Regional Administrator to specify protective liner requirements and other design/operating requirements for the pile that are appropriate to waste and site conditions, and the length of time the unit may operate. Further, remediation wastes could be placed into the pile without triggering LDRs, thereby enabling one of the most frequent uses of piles, the temporary staging of wastes prior to on-site treatment. (See 58 FR 8673, right column, middle)

The CAMU rule is found at 6 CCR 1007-3, Part 264, Subpart S. Consistent with the above citation, placement of remediation wastes that may otherwise be hazardous wastes is allowed and does not constitute creation of a regulated unit (See §264 552(a)(1)). In addition, the minimum technological requirements (i.e. design requirements) for waste piles are not applicable (See §264 552[a][2]). As applied in the context of an accelerated action, the Colorado CAMU rule also requires attainment of the substantive requirements of §264 Subpart B, C, D and E (See §264 552[a][3]). The requirements of §264 Subpart B are outlined in the following table.

TABLE 5-1
RCRA §264 SUBPART B SUBSTANTIVE REQUIREMENTS

Citation and Title	Requirement
§264 13 - Waste Analysis	Satisfied by characterization data presented in the PAM
§264 14 - Security	Rely on RFETS infrastructure
§264 15 - General Inspection Requirements	Personnel will inspect equipment during operations
§264 16 - Personnel Training	Training requirements will be identified in the project Health and Safety Plan

§264 Subpart C, Preparedness and Prevention is addressed in the RFETS RCRA Part B Permit and by RFETS infrastructure. Similarly, §264 Subpart D, Contingency Plan and Emergency Procedures is also addressed in the RFETS RCRA Part B Permit and by RFETS infrastructure. §264 Subpart E requirements are administrative in nature and will not be applicable to the CAMU.

§264 552(c) includes seven criteria for the CSFS CAMU. Two of the criteria are only applicable where waste will be left in place and will not be considered further (See §264 552(c)(4) and (7)). The five applicable criteria are evaluated in Table 5-2.

TABLE 5-2
CSFS CAMU CRITERIA

Criteria and Citation	Justification
The CSFS must facilitate a reliable, effective, protective, cost effective remedy See §264 552(c)(1)	The CSFS represents the superior means of soil management prior to thermal treatment, will minimize the spread of contaminated soil, and is cost effective
The CSFS must not create unacceptable risks to humans or environment See §264 552(c)(2)	Due to the short duration of use, the storm-water and dust controls will effectively mitigate the primary mechanisms for release of contaminants
Uncontaminated areas may only be used if it is more protective than using contaminated areas See §264 552(c)(3)	CSFS will be placed at a location previously used for the same purpose
The CSFS must expedite timing of remedial activity See §264 552(c)(5)	The CSFS will expedite timing of the remedial activity by reducing handling
The CSFS must enable the use of thermal treatment See §264 552(c)(6)	The CSFS will enable the use of thermal treatment by providing a protective approach to stockpiling the contaminated feed near the TDU

The areal configuration of the CSFS and it's relation to the excavation area and TDU is provided in Figure 2-1 of the PAM (See §264 552(e)(1)) The design, operation and closure described in Section 3 2 2 addresses the requirements established in §264 552(e)(2)

5 2.5 RCRA Subpart P Thermal Treatment Unit

The use of a TDU to treat soil containing hazardous wastes requires a permit waiver For that reason the discussion in this section is being provided to satisfy ¶17 of RFCA

The substantive requirements found in RCRA §265 Subpart P are applicable to the thermal desorption activity, because thermal treatment will occur, but the thermal treatment will not be conducted as controlled combustion in an enclosed device (See §265 370)

If the unit is continuous feed, the thermal treatment process must be brought to normal operating temperature prior to commencing treatment (See §265 373) This is not a requirement if batch treatment is used The applicable waste analysis requirements are satisfied by the site characterization that has been performed and summarized in the PAM (See §265 375)

Monitoring and inspections appropriate to the selected thermal desorption equipment will be conducted. Included, as appropriate, are monitoring of instrumentation, observing stack emissions, and inspecting equipment (See §265.377). The performance criteria and the requirement to re-treat materials that do not meet the performance criteria will act in lieu of specific treatment conditions. Closure requirements for the TDU are presented in section 5.2.7.

5.2.6 Temporary Unit Tank and Container Storage

The establishment of Temporary Units (TUs) may require a permit waiver if any of the tanks or containers are used for longer than 90-days. For that reason the discussion in this section is being provided to satisfy ¶17 of RFCA.

§264.553 provides that temporary tanks and containers used for the storage or treatment of hazardous remediation wastes may be subject to alternative design, and operating and closure requirements as long as the requirements are protective of human health and the environment (See §264.553(a)). The TU must be located within the facility boundary and may only be used for treatment or storage of remediation wastes (See §264.553(b)).

In establishing requirements for TUs seven factors must be considered: the length of time the unit operates, the type of unit, the volumes of remediation waste, the physical and chemical characteristics of the remediation waste, the potential for releases, the conditions at the site that will influence migration, and the potential for exposure if a release occurs (See §264.553(c)).

In conjunction with the thermal desorption, all containers will be compatible with the waste and be in good condition. If practicable, secondary containment will be provided for liquid wastes stored in containers.

For tanks, piping and ancillary equipment used in conjunction with the thermal desorption activity, secondary containment will be provided where practicable. Where secondary containment is not practicable (e.g., piping), the duration of operation, the low concentrations of hazardous constituents in the aqueous phase condensate, and the operator's continued presence during operations support an alternative requirement that does not include secondary containment. Closure requirements for the TUs are presented in section 5.2.7.

5 2 7 Closure Requirements

As noted earlier, the closure of the CSFS is described in section 3 2 2. The approach is to remove any residual soils which are above the cleanup target levels and to treat those soils to below the TDU Performance Standards. Any associated materials (e.g. tarpaulin, plastic trench lining) will be managed in accordance with regulations and RFETS procedures.

This discussion addresses the requirements necessary to meet the closure performance standards for the TDU (§265.381) and for the TU tanks and containers (§264.553(a)).

Following the completion of contaminated soil processing, the aqueous phase condensate, and used HEPA filters will be removed from the TDU and ancillary equipment and disposed of properly. The TDU and associated equipment, and any TU tanks and containers will then be decontaminated according to procedure number 4-SO-ENV-OPS-FO 04, Decontamination of Equipment at Decontamination Facilities. Performance standards are included in that procedure. Two 10,000 gal TU tanks used to contain condensate will be emptied after use. However, it is not practical to close these tanks after completion of this task since these tanks will be used in future environmental restoration activity.

The decontamination procedure requires project personnel to complete an "Equipment Decontamination/Wash Checklist and Record" sheet. Project personnel must verify that equipment has been decontaminated to levels specified in the Health and Safety Practices Manual, Section 18.10, Radiological Material Transfer and Unrestricted Release of Property and Waste. This procedure incorporates the radiological release criteria stated in Table 2-2 of the RFETS (Site) Radiological Controls Manual (K-H, 1996). Performing radiological decontamination to the levels specified in Table 2-2 will ensure that all other forms of contamination are similarly removed.

Decontamination methods are described in procedure 4-SO-ENV-OPS-FO 04, referenced above. Volumes of waste water generated during decontamination will depend on levels of contamination and the configuration of the vendor's thermal desorption unit. All efforts will be made, however, to limit the amount of decontamination water generated.

DRAFT

It is expected that any large scale decontamination will take place at the main decontamination facility located in the contractor's yard. Efforts will be made to decontaminate equipment (e.g. the subcontractors TDU) sufficiently to allow reuse.

5.2.8 VOC and Particulate Emission Controls

The Colorado Air Pollution Control Regulations require the application of reasonably available control technologies (RACT) to new sources of VOC emissions and to the disposal of VOCs by evaporation (5 CCR 1000-3, Regulation No. 7, "Reg. 7"). VOCs will be emitted during soil excavation, transport, and thermal desorption. Preliminary worst case calculations estimate the total VOCs in the excavated soils at 0.59 tons. The Colorado Air Quality Control Commission has found that for sources of VOCs less than 1 ton, RACT typically requires no controls. Based on the low concentrations of VOCs in the soil, specific VOC control measures will not be employed during excavation and transport.

The thermal desorption unit will use a condenser to capture VOCs desorbed from the soil. Appropriate control technologies to meet RACT requirements will be evaluated.

Two other VOC work practice/equipment specifications in Reg. 7 are also applicable. Any gauging devices, anti-rotation devices, accesses, seals, hatches, roof drainage systems, support structures, or pressure relief valves associated with storage tanks that hold liquids containing VOCs will be maintained and operated to prevent detectable vapor loss. The opening, actuation, or use of the listed devices will be limited to minimize vapor loss.

In addition, Reg. 7 requires that the transfer of any liquid containing VOCs to a tank, container, or vehicle compartment with a capacity exceeding 56 gallons be accomplished using submerged or bottom filling equipment to minimize splashing. This requirement will potentially apply to dewatering of the excavation, as well as to the transfer of thermal desorption condensate.

5.3 LOCATION-SPECIFIC REQUIREMENTS AND CONSIDERATIONS

No location-specific requirements or considerations unique to the activity were identified. RFETS site procedures will be followed.

6 0 IMPLEMENTATION SCHEDULE

The excavation of contaminated soils from the Mound Site is scheduled to commence in the spring of 1997. Treatment of the contaminated soils is scheduled to begin in the early summer of 1997. Data reduction and reporting efforts are scheduled to be completed by the end of the summer of 1997. Any delays, scope, or budget changes may affect these dates.

7.0 REFERENCES

DOE, 1992, *Historical Release Report for the Rocky Flats Plant*, Rocky Flats Plant, Golden, CO

DOE, 1995, *Phase II RFI/RI Report for Operable Unit No. 2 - 903 Pad, Mound, and East Trenches Area*, Rocky Flats Environmental Technology Site, Golden, CO

DOE, 1996, *Final Rocky Flats Cleanup Agreement*, Rocky Flats Environmental Technology Site, Golden, CO

EG&G, Rocky Flats, Inc., 1994, *Soil Vapor Survey Report for the Operable Unit 2 Subsurface Interim Remedial Action*, January

RMRS, 1996a, *Draft Trenches and Mound Site Characterization Report*, RF/ER-96-0044 UN, September

RMRS, 1996b, *Results of the 1996 Pre-Remedial Investigation of the Mound Site*, RF/RMRS-96-0055 UN, September

RMRS, 1996c, *Sampling and Analysis Plan to Support the Source Removal at the Mound Site*, IHSS 113, RF/RMRS-96-0060

Cohen, R. M. and Mercer, J. W., 1993, *DNAPL Site Evaluation*, C. K. Smoley, Boca Raton, FL

EPA, 1992, *Estimating Potential for Occurrence of DNAPL at Superfund Sites*, OSWER Publication 9355 4-07/FS

K-H, 1996, *Rocky Flats Environmental Technology Site Radiological Control Manual*, June